WHAT IS CLAIMED IS:

1. A method for preparing a composite silica membrane comprising the following steps of:

(a) a primary modification of surface of a porous support, wherein silica xerogel is penetrated into said porous support surface by pressing and then sintered;

(b) a secondary modification of said primarily modified surface of said porous support by soaking said primarily modified surface with γ-alumina sol via a soaking-rolling method, followed by drying and sintering; and

(c) formation of a coating membrane by soaking said primarily and secondarily modified surface with a surface coating material in sol phase by a soaking-rolling method, followed by drying and sintering.

2. The method for preparing a composite silica membrane according to Claim 1, wherein said primary modification is performed by rolling wherein said silica xerogel having a particle size of 80 to 120nm is penetrated into said surface of said support at 100 to 200 atm, and then sintered at 600 to 700℃ for 1 - 3 hours.

3. The method for preparing a composite silica membrane according to Claim 1, wherein said secondary modification is performed by wetting upper part of said support with γ-alumina sol while applying vacuum at the lower part of said support

thereby facilitating penetration of said γ-alumina sol into the pores of said support while the sol solution still remaining after said penetration is being rolled.

4. The method for preparing a composite silica membrane according to Claim 1, wherein said support is a porous stainless steel support.

5. The method for preparing a composite silica membrane according to Claim 1, wherein said surface coating material is polymeric silica sol.

6. The method for preparing a composite silica membrane according to Claim 1, wherein the size of pores of said support after said primary modification and said secondary modification is in the range of from 5 to 10nm.

7. The method for preparing a composite silica membrane according to Claim 1, wherein formation of said coating membrane is performed by wetting upper part of said support with a surface coating material in sol phase while applying vacuum at the lower part of said support, thereby facilitating penetration of said coating material into the pores of said support while the sol solution still remaining after said penetration is being rolled.

8. The method for preparing a composite silica membrane according to Claim 1,

wherein said drying is performed at 20 to 30℃ with relative humidity of 50 to 70% for 10 to 15 hours, and the sintering is performed at 500℃ to 600℃.